

May 15<sup>th</sup>, 2023

Ms. Cory-Ann Wind / Mr. Chintan Trivedi  
Oregon Clean Fuels Program Manager  
[cory.ann.wind@deq.oregon.gov](mailto:cory.ann.wind@deq.oregon.gov)  
(503) 869-1326

**RE: Proposed Metering Options for Forklift Trucks**

**Dear Ms. Wind & Mr. Trivedi,**

Thank you very much for the response to our inquiries on changes to the DEQ Fuel Supply Equipment registration and reporting. In this letter, we highlight some issues associated with metering as well as describe some of SCT's metering solutions that can be deployed.

**Metering Requirements**

We do understand that metering is the goal. However, there are still many issues associated with metering. Below are some of the issues we would like to bring to your attention:

1. The vast majority of the industrial battery chargers in service do not have any built-in metering capabilities to report kWhrs dispensed.
2. There are no dedicated power meters on the AC panels supplying forklift battery chargers. Most buildings utilize a single power meter and the charger load is a fraction of the total kWhrs used. In addition, forklift charging stations are placed at different locations throughout warehouses and manufacturing facilities. As a result, there is no single point to place a power meter to aggregate energy measurements.
3. Even if power meters are installed at the point of dispensing, there is no way to segregate the kWhrs for new and old trucks. In many installations, the batteries are charged on racks (see image below) and then placed in either an old or new trucks. As such, there is no way of tracking whether the dispensed power is associated with new or old trucks.



Typically Battery Charging Area



Battery Placed on a Truck

Now with that said, we do have the technology to meter either the truck side or the charger side. However, there are still two issues that need to be addressed:

1. We need guidance from the DEQ as to whether we need to track new versus old trucks when it comes to metering. If the requirement is to meter the chargers at the point of dispensing, then the DEQ may need to eliminate the need to track old versus new trucks. Otherwise, we would need to meter the trucks themselves.
2. Regardless of whether we need to meter the trucks or the chargers, it will take extensive time to source the metering equipment, getting the required permits, and install them at each facility. Just the permitting process could take anywhere from 3-9 months to complete.

Given the above, and while we do support the DEQ desire to meter the chargers or trucks, we would gracefully ask the DEQ to allow for a 12 month grace period to enforce the metering requirement.

### SCT Metering Technologies

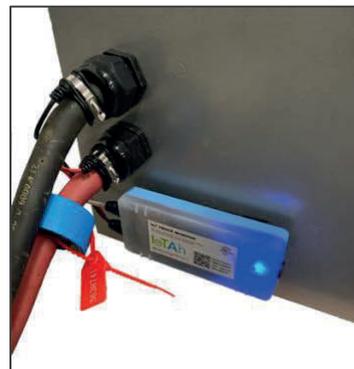
As we have outlined above, we do support the transition to metering as long as the DEQ clarify the issues outlined regarding metering issues and allow enough time to source, secure permits and install meters on chargers and/or forklift trucks.

SCT has developed a number of technologies to support metering initiatives and depending on what direction the DEQ takes, can deploy the appropriate technology. Below is a brief description of the metering products / solutions that SCT developed:

1. **CHARGlink**: SCT has developed the **CHARGlink** product platform, an innovative, cloud-based industrial charger monitoring and data logging device. **CHARGlink** automatically tracks and logs actual Amp-Hour and kWhr supplied by industrial chargers to charge electric forklift trucks thus providing an audit trail of actual forklift electricity usage at clients' manufacturing and distribution facilities.



**CHARGlink** Product



**CHARGlink** Installed on an industrial charger

Each **CHARGlink** unit is equipped with wireless communication for remote monitoring and configuration, where data is automatically uploaded to SCT’s cloud-based servers. The **CHARGlink** unit is typically installed at the output terminals of industrial chargers for an easy upgrade to a metered and wireless connected charger.

2. **IoTAh** is an innovative, cloud based, *forklift truck monitoring and data logging device*. IoTAh automatically tracks and logs true Amp-Hour and KWhr usage of electric forklift trucks thus providing an audit trail of actual forklift truck usage at client facilities. The IoTAh product allows for tracking the true and actual kWhr consumed by each individual forklift truck thus enabling tracking the consumption of old versus new forklift trucks.



**IoTAh** Product

The **IoTAh** unit is equipped with wireless communication for remote monitoring and configuration as well as automatic upload of truck usage data into the **IoTAh** cloud application, **IoTAh-view**.

The **IoTAh-view** cloud app manages and aggregates all forklift truck operational data including:

- Usage and idle times
- Shift and daily usage data
- Daily, weekly, monthly, and quarterly Ahrs and kWhrs



**IoTAh-view** Cloud App

3. ***IoTEmeter Edge***: SCT has also developed the ***IoTEmeter*** product platform, an innovative, cloud-based electricity metering and data logging device. *The IoTEmeter product platform* logs and measures the actual amount of electricity (in kWhr) consumed by industrial chargers to charge electric forklift trucks, as well as the time it was consumed, thus providing an audit trail of actual forklift electricity usage at clients' manufacturing and distribution facilities. Each ***IoTEmeter*** unit is equipped with wireless communication for remote monitoring and reporting of consumed kWhrs, where data is automatically uploaded to SCT's cloud-based servers. The ***IoTEmeter*** units would need to be installed at the AC panels or subpanels feeding industrial chargers or at each charging station, the chargers are distributed throughout the facility.



***IoTEmeter Edge*** Wireless AC Panel Meter

Thank you for taking our comments into consideration. We look forward to continued participation and discussion.

Respectfully,

A handwritten signature in blue ink that reads 'Nasser Kutkut'.

Nasser Kutkut, PhD, DBA  
CEO  
Smart Charging Technologies LLC